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COMMENTS:

Comments on DSDD.

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Engineering & sciences applied to the earth & its environment

April 20, 1994 87X46600D, D5

Mr. Frank Battaglia
United States Environmental Protection Agency - Region I
Waste Management Building
90 Canal Street
Boston, Massachusetts 02114

Re: Draft Stabilization Design Documents - Response to Comments Former CIBA-GEIGY Facility Cranston, Rhode Island - Stabilization Action

Dear Mr. Battaglia:

CIBA-GEIGY and Woodward-Clyde Consultants (WCC) have reviewed your comment letter on the Draft Stabilization Design Documents (DSDD) dated March 16, 1994. Based upon our review of USEPA's comments, we have prepared the following responses:

1. The performance standard for the ground water capture system (reverse the hydraulic gradient at the bulkhead) as discussed on pages 3-1 & 3-2 of volume 1 should be measured by the drawdown and present minimum drawdown goals in locations near the upstream and downstream ends of the capture zone. The programmable logic controller (PLC) discussed on page 3-5 of volume 1 should be tied into these other locations.

Response:

The groundwater capture system will be calibrated to the drawdown measured in the five well couplets (P-35S/MW-31S, P-2D/MW-31D, P-1S/MW-30S, P-1D/MW-30D, P-37S/MW-29S). Water levels measured in these well couplets will be evaluated during startup to determine if the drawdown goals are being achieved at the bulkhead. Minimum drawdown goals were presented in Figure 3-1 and Table 3-1 of the DSDD.

Selected wells/piezometers (MW-2S, P-2S, P-36S, P-38S, and MW-3S) will also be monitored to ensure that the minimum drawdown goals are J being met. These locations will be tied into the PLC. Data from each of these wells/piezometers will be used to evaluate drawdown at the limits of the capture zones.

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2. The performance monitoring criteria for the ground water capture system at the top of page 3-5 of volume 1 states "These data will be evaluated on a periodic basis to determine whether the performance criteria ...have been met." Specify the time frame for the evaluation of data on a periodic basis. This time frame should be more frequent during system start-up until equilibrium is reached.

Response: The performance monitoring criteria for the groundwater capture system

will be evaluated according to the following schedule:

- * twice weekly until equilibrium is achieved; and
- * twice monthly after equilibrium is achieved.
- 3. The analytical performance monitoring criteria for ground water at the top of page 3-6 of volume 1 should be expanded. Why was "(after year 2)" selected for the semi-annual sampling?

Response:

Performance monitoring will include analyzing groundwater for VOCs. Because these compounds were detected with the greatest frequency, these compounds are believed to be the primary constituents of concern in the Production Area groundwater. Groundwater will be sampled and analyzed for selected VOCs. Groundwater will be sampled for 8 consecutive quarters before semi-annual sampling begins. We believe that data from 8 quarterly sampling evemts (2 years) is sufficient to evaluate long-term trends in constituent concentrations.

4. The performance standard for the soil vapor extraction system (SVE) discussed on page 3-7 of volume 1 should indicate the amount of vacuum to be maintained in the monitoring wells. This performance standard should also have some measure of environmental benefit (reduction of VOC concentration in soils) associated with it.

Response:

Performance monitoring of the soil vapor extraction system will include measuring vacuum and air flows at four observation points (VE-4, VE-5, VE-6, and VE-8). Based on the results of the HIVAC pilot test, we expect that the amount vacuum to be maintained will range from approximately 1.0 to 5.2 millimeters of Hg at air flows of about 0.8 to 2.0 liters per minute.

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SEE 14 J-11 Performance monitoring of the SVE system will also include monthly sampling of soil vapor and quarterly sampling of groundwater (to assess the reduction of VOCs in these media). These results will be evaluated as the data become available.

The shut-down criteria for the ground water capture system discussed on page 4-1 of volume 1 should indicate the time between the four sampling events and the wells to be sampled. If a flush/surge test indicates that it would be beneficial in reducing constituent concentrations how will flush/surging be incorporated in the shut-down criteria?

Response:

The four confirmatory sampling events proposed for the groundwater capture system (discussed on page 4-1 of Vol.1) will be performed 3 to - OV 4 months apart. At a minimum, seven wells will be sampled during each event: RC-3, RC-5, MW-1S, MW-2S, P-35S, P-36S, and P-37S.

After startup, testing will be performed to determine if flushing /surging will reduce constituent concentrations in groundwater. This testing will consist of evaluating concentration trends of selected constituents over time. After the concentration of constituents become statistically flat, flushing/surging will be evaluated to enhance the removal of constituents from groundwater. If flushing/surging ts considered to be effective, it will most likely be performed as part of the final measure for remediating contaminated groundwater in the Production Area.

The shut-down criteria for this activity will be determined as part of the design for the final remedy.

6. The confirmatory sampling plan for the ground water capture system on page 4-2 of volume 1 should confirm that the system is meeting the approved performance standards (gradient reversal & Cranston POTW limits) and, therefore, should be conducted before shut-down criteria have been satisfied. For what and when will ground water be sampled? This section should be discussed further with EPA.

Response:

Performance monitoring (Section 3.2.2) will be conducted while the system is operating to confirm that the system is meeting the approved performance standards (i.e., gradient reversal is being maintained and discharges to the Cranston POTW meet specified limits). Confirmatory sampling of the groundwater will not be conducted until the shut-down criteria have been attained. At a minimum, confirmatory sampling will include sampling of groundwater at wells: RC-3, RC-5, MW-1S, MW-

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2S, P-35S, P-36S, and P-37S. These wells will be sampled semiannually for at least one year after the shut-down criteria have been satisfied. The groundwater samples will be analyzed for VOCs only (the primary constituents of concern in the Production Area).

7. The shut-down criteria for the SVE system on page 4-3 of volume 1 should address the flush/surge issue as discussed in comment 5. Also, why is the ground water portion of the shut-down criteria inconsistent in both scenarios?

Response:

Flushing and surging is not an activity that was proposed for the SVE system in the SWMU-11 area. The overall goal of the SVE system is to reduce the mass of VOCs in soil and groundwater at SWMU-11 while attaining the required discharge limitations (e.g. RIDEM's air discharge limits, Cranston's POTW discharge limits).

The goal of the groundwater capture system along the bulkhead is 19 16/14 or different from the goal of groundwater capture at SWMU-11. The goal of the capture system along the bulkhead is to minimize discharges into game the Pawtuxet River by reversing the gradient at the bulkhead. The goal of the groundwater capture system at SWMU-11 is to remove the most contaminated groundwater (where SVE is taking place) and lower the water table so that more soil can be remediated by the SVE system. Because the goals of these two groundwater capture systems are different, the shut down criteria for each system are also different.

8. The confirmatory sampling plan for the SVE system on page 4-3 of volume 1 should confirm that the system is meeting the performance standards (amount of vacuum, DEM vapor emission limits, & any measure of environmental benefit in the soils). At what depths will the soils be sampled for VOC analysis?

Response:

Performance monitoring will be conducted to confirm that the SVE system is meeting its performance standards. Performance monitoring will include measuring and analyzing air emissions (to ensure that vapor emission limits are being met), measuring vacuum in the selected monitoring points (to ensure capture), and analyzing groundwater and soil gas (to evaluate reductions in constituent concentrations).



Following shut-down, confirmatory soil sampling will be performed for the SVE system. It will include sampling and analyzing soil in the SWMU-11 area. Borings will be advanced and split-spoon samples will be collected continuously from 2 feet below grade to the top of the

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water table (about 7 to 8 feet below grade). Samples with the highest headspace concentrations (measured in the field with a PID or FID) will be shipped to the laboratory for analysis.

We believe these responses address USEPA's major concerns. Should you have any questions or comments, please feel free to contact us.

Very truly yours,

Tom Pisciotta

Project Hydrogeologist

Mark Houlday

Project Manager

cc: Diane Leber (CIBA-GEIGY)